In the Claims:

The following is a list of claims pending in this application and their current status. This list replaces all prior versions and listings.

1. (Previously presented) A method of determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

computing one or more values of a number of bit positions b of a quadrature-amplitude-modulation symbol, based on one or more values of a number of symbols in an information field K, and one or more values of a number of control code symbols per discrete-multi-tone symbol z, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K)\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}$$

$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right),$$

$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right]$$

$$W(s,z,K)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}$$

$$\omega(b)=\frac{4}{2b+3},$$

$\Gamma(x)=(x-1)!$, and

$$b\left(\gamma_{eff},s,z\right)=\frac{\alpha}{sn_{eff}}\left(K+\rho s+zs\right)$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, ρ represents a framing mode index, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, and n_{eff} represents an effective number of subchannels; and

selecting the value of K and the value of z which provides a maximum number of bit positions based on the one or more determined values of b .

2. (Original) The method of claim 1 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

3. (Previously presented) The method of claim 1 wherein the size of the frame ranges from 0 to N_{max}-s-zs symbols, where N_{max} is a predetermined value.

4. (Currently amended) The method of claim 1 further comprising:

determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) based on one or more values of a length of [[~~an~~]] the information field K within a range from 0 to N_{max}-ρs-sz, where N_{max} is a predetermined value, in accordance with the following relationship:

$$\Theta(K) = \omega\left(b\left(\gamma_{eff}, s, z\right)\right) p_{QAM} - p_e \text{, and}$$

$$\omega\left(b\left(\gamma_{eff},s,z\right)\right)p_{QAM}$$
$$=\omega\left(\frac{\alpha}{sn_{eff}}\left(K+\rho s+zs\right)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}\left(K+\rho s+zs\right)}\right)$$
$$\times\ erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}\left(K+\rho s+zs\right)+1}-2\right)}\right)$$
$$\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}\left(K+\rho s+zs\right)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}\left(K+\rho s+zs\right)+1}-2\right)}\right)\right]$$

$$p_e=\left[1-\left(1-W\left(s,z,K\right)\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation ; and

comparing the value of $\Theta(0)$ and $\Theta(N_{max}\text{-}s\text{-}zs)$ to 0; and

setting the value of K in response to the comparing.

5. (Previously presented) The method of claim 4 further comprising: when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}s\text{-}sz)<0$, setting $K=N_{max}\text{-}s\text{-}zs$.

6. (Previously presented) The method of claim 4 further comprising: setting $b(\gamma_{eff}, s, z)$equal to $(\alpha\ \mathrm{N_{max}})/(s\ n_{eff})$ for all values of γ_{eff} and z.

7. (Previously presented) The method of claim 4 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}s\text{-}sz)>0$, setting $K=N_{max}\text{-}1$.

8. (Previously presented) The method of claim 7 further comprising: setting $s=1$ *and* $z=0$.

9. (Currently amended) A method of selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

storing, in a table, selected sets of forward error correction parameters and associated net coding gains from using the sets, the selected sets including at least a number (*s*) of discrete multi-tone symbols in a forward-error-correction frame and a corresponding number (*z*) of forward-error-correction control symbols in ~~a particular~~ each discrete multi-tone symbol, the sets and associated [[~~the~~]] net coding gains corresponding to combinations of a signal-to-noise ratio and a number of subchannels carrying discrete multi-tone symbol signals;

determining a signal-to-noise ratio representing a set of the plurality of subchannels carrying the discrete multi-tone symbol signals; and

using the table, selecting a particular set of forward error correction parameters for the channel based on at least the signal-to-noise ration representing the set of the plurality of subchannels and the net coding gain for the selected particular set.

10. (Previously presented) The method of claim 9 wherein the net coding gains are stored as bilinear approximations.

11. (Currently amended) A method of selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

storing, in a table, selected sets of forward error correction parameters and associated net coding gains from using the sets, the selected sets including at least a number (*s*) of discrete multi-tone symbols in a forward-error-correction frame, a corresponding number (*z*) of forward-error-correction control symbols in ~~a particular~~ each discrete multi-tone symbol, and a maximum number of transmissions (*k*) , the sets and ~~the~~ associated net coding gains corresponding to

combinations of a signal-to-noise ratio and a number of subchannels carrying discrete multi-tone symbol signals;

determining a signal-to-noise ratio representing a set of the plurality of subchannels carrying [[~~the~~]] discrete multi-tone symbol signals; and

using the table, selecting a particular set of forward error correction parameters for the channel based on at least the signal-to-noise ratio representing the set of the plurality of subchannels and the net coding gain for the selected particular set.

12. (Previously presented) The method of claim 11 wherein the net coding gains are stored as bilinear approximations.

13. (Original) The method of claim 11 wherein and the values of s and z are in accordance with the G.dmt standard.

14. (Currently amended) The method of claim [[~~13~~]] 11 wherein the values of s and z are in accordance with the G.lite standard, such that a subset of the tables associated with the values of s and z in accordance with the G.dmt standard are used when the channel uses the G.lite standard.

15. (Previously presented) A method of increasing a bit load of a multicarrier system comprising a channel having a plurality of subchannels, comprising:

determining a bit load for at least one subchannel based on a target symbol error rate ε_s, a maximum number of symbol errors that can be corrected t, a number of symbols in an information field K, a maximum number of transmissions k, and a number of bits per subchannel; and

selecting the maximum number of symbol errors t, the number of symbols in the information field K and the maximum number of transmissions k, such that a net coding gain is increased, and wherein t, K and k are also selected such that no forward error correction is applied when the number of subchannels exceeds a predetermined

threshold number of subchannels.

16. (Original) The method of claim 15 wherein the channel uses the G.dmt standard.

17. (Original) The method of claim 15 wherein the channel uses the G.lite standard.

18. (Previously presented) A method of determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

computing one or more values of a number of bit positions b of a quadrature-amplitude-modulation symbol based on one or more values of a number of symbols in an information field K, one or more values of a number of control code symbols per discrete-multi-tone symbol z, and a maximum number of transmissions k, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K,k)\,\varepsilon_S^{\frac{1}{k(0.5sz+1)}}\right)^{1/\alpha}$$

$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)$$

$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right]$$

$$W(s,z,K,k)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}$$

$$\times\left[\frac{\Gamma(K+\rho s+sz+1)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+2)}\right]^{-(k-1)/(0.5\cdot sz+1)k}$$

$$\omega(b)=\frac{4}{2b+3},$$

$$\Gamma(x)=(x-1)!, \text{ and}$$

$$b\left(\gamma_{eff}, s, z\right)=\frac{\alpha}{sn_{eff}}\left(K+\rho s+zs\right)$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, ρ represents a framing mode index; and n_{eff} represents an effective number of subchannels; and

selecting the value of K and the value of z which provides a maximum number of bit positions based on the one or more determined values of b.

19. (Original) The method of claim 18 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

20. (Previously presented) The method of claim 18 wherein the size of the frame ranges from 0 to N_{max}-ρs-sz symbols, where N_{max} is a predetermined value.

21. (Currently amended) The method of claim 18 further comprising:

determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) based on one or more values of a length of [[~~an~~]] <u>the</u> information field K within a range from 0 to N_{max}-ρs-sz, where N_{max} is a predetermined value, in accordance with the following relationship:

$$\Theta(K)=\omega\left(\frac{\alpha}{sn_{eff}}(K+\rho s+zs)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)$$

$$\times\ erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)$$

$$\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\right]$$

$$-\left[1-\left(1-W(s,z,K,k)\,\varepsilon_S^{\frac{1}{k(0.5\cdot sz+1)}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation,; and

comparing the value of $\Theta(0)$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)$ to 0; and

setting the value of K in response to the comparing.

22. (Previously presented) The method of claim 21 wherein when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)<0$, setting $K=N_{max}\text{-}\ \rho s\text{-}sz$.

23. (Previously presented) The method of claim 18 further comprising:

setting $b(\gamma_{eff}, s, z)$ equal to $(\alpha\ \mathrm{N}_{\mathrm{max}})/(s\ n_{eff})$ for all values of γ_{eff} and z.

24. (Original) The method of claim 18 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)>0$, setting $K=N_{max}\text{-}\rho$.

25. (Previously presented) The method of claim 24 further comprising:

setting s=1 and z=0.

26. (Currently amended) An apparatus for determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

means for computing a number of bit positions b of a quadrature-amplitude-modulation symbol based on one or more values of a number of symbols in [[~~the~~]] an information field K and one or more values of a number of control code symbols per discrete-multi-tone symbol z, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K)\,\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}$$

$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right), \text{ and}$$

$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right].$$

$$W(s,z,K)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\,\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}$$

$$\omega(b)=\frac{4}{2b+3},$$ [[~~αvδ~~]] and

$$\Gamma(x)=(x-1)!,$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, ρ represents a framing mode index,, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, and n_{eff} represents an effective number of subchannels; and

means for selecting the value of K and the value of z which provides a maximum number of bit positions based on the one or more determined values of b

. 27. (Original) The apparatus of claim 26 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

28. (Previously presented) The apparatus of claim 26 wherein the size of the frame ranges from 0 to N_{max}-s-zs symbols, where N_{max} is a predetermined value.

29. (Previously presented) The apparatus of claim 26 further comprising:

means for determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) based on one or more values of a length of an information field K within a range from 0 to N_{max}-ρs-sz, where N_{max} is a predetermined value, in accordance with the following relationship:

$$\Theta(K)=\omega\left(b\left(\gamma_{eff},s,z\right)\right)p_{QAM}-p_e z \text{, and}$$

$$\begin{aligned}
&\omega\left(b\left(\gamma_{eff},s,z\right)\right)p_{QAM}\\
&=\omega\left(\frac{\alpha}{sn_{eff}}(K+\rho s+zs)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)\\
&\times\ erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\\
&\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\right]
\end{aligned}$$

$$p_e=\left[1-\left(1-W\left(s,z,K\right)\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation; and

means for comparing the value of $\Theta(0)$ and $\Theta(N_{max}\text{-}s\text{-}zs)$ to 0; and

means for setting the value of K in response to the means for comparing.

30. (Previously presented) The apparatus of claim 29 wherein when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}s\text{-}sz)<0$, said means for setting sets $K=N_{max}\text{-}s\text{-}zs$.

31. (Previously presented) The apparatus of claim 30 further comprising:

means for setting $b(\gamma_{eff}, s, z)$equal to $(\alpha\ N_{max})/(s\ n_{eff})$ for all values of γ_{eff} and z.

32. (Previously presented) The apparatus of claim 30 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}s\text{-}sz)>0$, said means for setting sets $K=N_{max}\text{-}1$.

33. (Previously presented) The apparatus of claim 32 wherein said means for setting sets s=1 and z=0.

34. (Currently amended) An apparatus for selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

means for storing, in a table, selected sets of forward error correction parameters and associated net coding gains from using the sets, the selected sets including at least a number (s) of discrete multi-tone symbols in a forward-error-correction frame and a number (z) of forward-error-correction control symbols in ~~a particular~~ each discrete multi-tone symbol, the sets and ~~the~~ associated net coding gains corresponding to combinations of a signal-to-noise ratio and a number of subchannels carrying discrete multi-tone symbol signals;

means for determining a signal-to-noise ratio representing a set of the plurality of subchannels carrying the discrete multi-tone symbol signals; and

means for selecting a particular set of forward error correction parameters ~~of~~ for the channel based on at least the signal-to-noise ratio representing the set of the plurality of subchannels and the net coding gain for the particular set.

35. (Previously presented) The apparatus of claim 34 wherein the net coding gains are stored as bilinear approximations.

36. (Currently amended) An apparatus for selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

means for storing, in a table, selected sets of forward error correction parameters and associated net coding gains from using the sets, the selected sets including at least a number (*s*) of discrete multi-tone symbols in a forward-error-correction frame, a number (*z*) of forward-error-correction control symbols in ~~a particular~~ each discrete multi-tone symbol, and a maximum number of transmissions (*k*), the sets and ~~the~~ associated net coding gains corresponding to combinations of a signal-to-noise ratio and a number of subchannels carrying discrete multi-tone symbol signals;

means for determining a signal-to-noise ratio representing a set of the plurality of subchannels carrying [[~~the~~]] discrete multi-tone symbol signals; and

means for selecting a particular set of forward error correction parameters for the channel based on at least the signal-to-noise ratio representing the set of the plurality of subchannels and the net coding gain for the particular set.

37. (Previously presented) The apparatus of claim 36 wherein the net coding gains are stored as bilinear approximations.

38. (Original) The apparatus of claim 36 wherein the values of *s* and *z* are in accordance with the G.dmt standard.

39. (Original) The apparatus of claim 38 wherein the values of *s* and *z* are in accordance with the G.lite standard, such that a subset of the tables associated

with the values of s and z in accordance with the G.dmt standard are used when the channel uses the G.lite standard.

40. (Currently amended) An apparatus for increasing a bit load of a multicarrier system comprising a channel having a plurality of subchannels, comprising:

means for determining a bit load for at least one subchannel based on a target symbol error rate ε_s, a maximum number of symbol errors that can be corrected t, a number of symbols in an information field K, a maximum number of transmissions k, and a number of bits per subchannel; and

means for selecting a maximum number of symbol errors t, the number of symbols in the information field K and the maximum number of transmissions k, such that a net coding gain is increased wherein the means for selecting also selects t, K and k such that no forward error correction is applied when the number of subchannels exceeds a predetermined threshold number of subchannels.

41. (Previously presented) An apparatus for determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

means for computing one or more values of a number of bit positions b of a quadrature-amplitude-modulation symbol based on one or more values of a number of symbols in an information field K, one or more values of a number of control code symbols per discrete-multi-tone symbol z, and a maximum number of transmissions k, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K,k)\,\varepsilon_S^{\frac{1}{k(0.5sz+1)}}\right)^{1/\alpha}$$

$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)$$

$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right]$$

$$W(s,z,K,k)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\,\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}$$

$$\times\left[\frac{\Gamma(K+\rho s+sz+1)}{\Gamma(K+\rho s+0.5\cdot sz)\,\Gamma(0.5\cdot sz+2)}\right]^{-(k-1)/(0.5\cdot sz+1)k}$$

$$b\left(\gamma_{eff},s,z\right)=\frac{\alpha}{sn_{eff}}(K+\rho s+zs)$$

$$\omega(b)=\frac{4}{2b+3},\text{ and}$$

$$\Gamma(x)=(x-1)!,$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, and ρ represents framing mode index; and n_{eff} represents an effective number of subchannels; and

means for selecting the value of K and z to provide a maximum number of bit positions based on the one or more determined values of b.

42. (Original) The apparatus of claim 41 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

43. (Previously presented) The apparatus of claim 41 wherein the size of the frame ranges from 0 to N_{max}-ρs-sz symbols, where N_{max} is a predetermined value.

44. (Currently amended) The apparatus of claim 41 further comprising:

means for determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) in accordance with the following relationship:

$$\Theta(K)=\omega\left(\frac{\alpha}{sn_{eff}}(K+\rho s+zs)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)$$

$$\times\ erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)$$

$$\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\right]$$

$$-\left[1-\left(1-W(s,z,K,k)\,\varepsilon_S^{\frac{1}{k(0.5\cdot sz+1)}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation;

<u>means for</u> comparing the value of $\Theta(0)$ and $\Theta(N_{max}$-ρs-$zs)$ to 0; and

<u>means for</u> setting the value of K in response to the comparing.

45. (Previously presented) The apparatus of claim 44[[41]] wherein when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)<0$, said means for setting sets $K=N_{max}\text{-}\rho s\text{-}zs$.

46. (Previously presented) The apparatus of claim 45 further comprising: means for setting $b(\gamma_{eff}, s, z)$equal to $(\alpha\ \mathrm{N}_{max})/(s\ n_{eff})$ for all values of γ_{eff} and z.

47. (Previously presented) The apparatus of claim 41 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)>0$, said means for setting sets $K=N_{max}\text{-}\rho$.

48. (Previously presented) The apparatus of claim 47 wherein said means for setting sets s=1 and z=0.

49. (Previously presented) A method of selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

storing, in one or more tables, net coding gains for a plurality of values of signal-to-noise ratios and numbers of subchannels, the net coding gains corresponding to particular sets of forward error correction parameters, the sets including a number (s) of discrete multi-tone symbols in a forward-error-correction frame, a number (z) of forward-error-correction control symbols, and a maximum number of transmissions (k);

determining a signal-to-noise ratio representing a subset of the subchannels to provide a representative performance measurement; and

selecting from the tables a particular set of values of s, z and k based on at least the representative performance measurement and the net coding gains.

50. (Previously presented) The method of claim 49 wherein the net coding gains are stored as bilinear approximations.

51. (Previously presented) The method of claim 49 wherein and the values of s and z are in accordance with the G.dmt standard.